

National Aeronautics and  
Space Administration

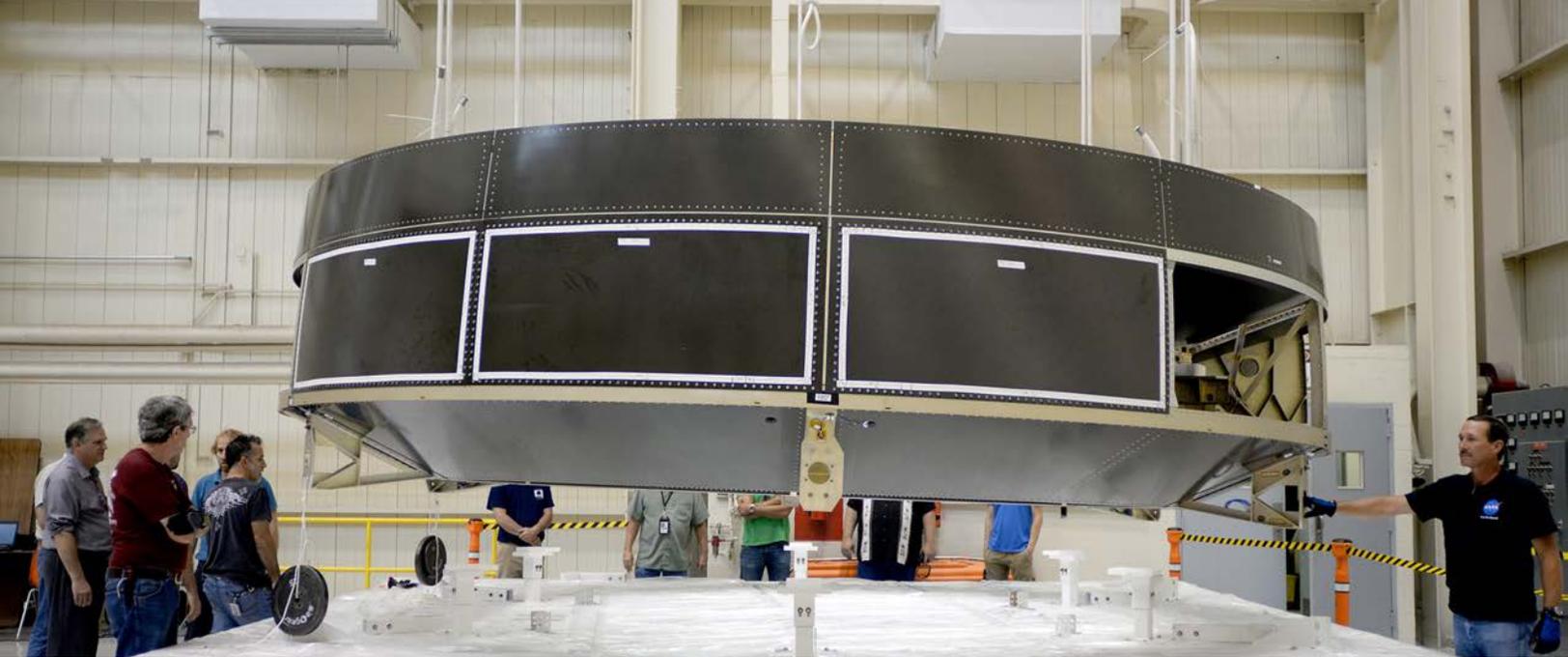


# ORION

JUNE 2015

**ORION CREW MODULE  
ADAPTER SIMULATOR ARRIVES  
AT NASA GLENN'S SPACE POWER FACILITY**





## NASA GEARS UP TO TEST ORION'S POWERHOUSE

NASA is getting ready for a series of tests that will check out Orion's service module, a critical part of the spacecraft that will launch atop the agency's Space Launch System (SLS) rocket on future missions to an asteroid and Mars. The testing, which will take place at NASA Glenn's Plum Brook Station in Sandusky, Ohio, began with the arrival of a crew module adapter simulator on June 22. The crew module adapter connects the European Space Agency-provided service module to the Orion crew module.

The testing will simulate launch and ascent acoustic and mechanical vibrations. Technicians will use a large vibration table to mimic the shaking the service module will experience when SLS boosts Orion into space and then test how it

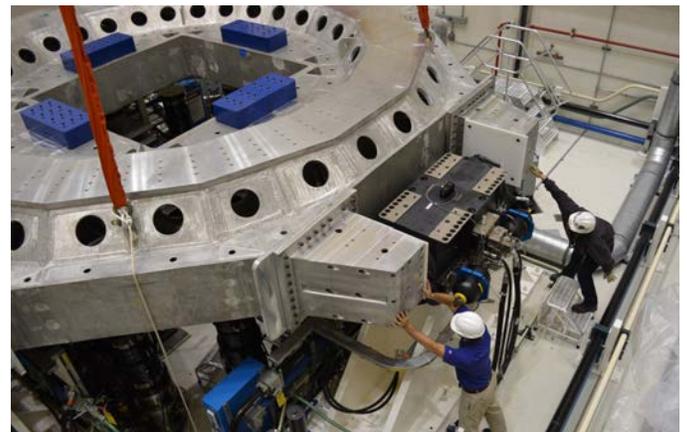
endures vibration from the noise it will experience during the rocket's powerful liftoff.

The testing campaign at Plum Brook Station will continue for most of 2016. Once complete, the stacked structural test articles will be sent to Lockheed Martin's facility in Sunnyvale, California, where hardware and software simulating other parts of Orion will be integrated before undergoing additional structural tests. Testing on structural representations allows engineers to make sure flight hardware is properly built and will perform to NASA's crew safety and flight requirements.

► [Read the full story](#)



The Space Power Facility at NASA Glenn's Plum Brook Station will be used in upcoming testing for Orion's service module. Within the vacuum chamber, it is possible to perform development and flight qualification testing of full-scale space-flight systems in vacuum and temperature environments ranging from low Earth orbit to deep space to planetary surface conditions.



A 22-foot-wide, 55,000-pound vibration-simulating table was delivered to NASA Glenn's Space Power Facility at Plum Brook Station in October 2014. It uses four horizontal servo-hydraulic actuators and 16 vertical to vibrate the table in such a way that a spacecraft set on top of it would experience the same amount of shaking that it could expect when launching on top of a rocket.

# ORION HEAT SHIELD COMPLETES JOURNEY TO LANGLEY

After enduring searing temperatures near 4,000 degrees Fahrenheit during Orion's first flight test in December 2014, the spacecraft's heat shield will be treated to a splash of cooler environmental testing at the Hydro Impact Basin at NASA Langley Research Center in Hampton, Virginia.



View time-lapse imagery of the heat shield at Marshall as technicians remove it from the seven-axis milling machine to a tractor for shrink-wrapping and shipment: <http://bit.ly/1JojaZo>

Serving as Orion's protector, the heat shield is designed to keep astronauts and the spacecraft safe from the heat it experiences when reentering the Earth's atmosphere.

The 16.5-foot diameter heat shield arrived at Langley in the early hours of June 4, in preparation for water-impact tests next year. During testing, engineers will integrate the heat shield onto an Orion crew module mockup and drop-test the spacecraft to simulate scenarios for parachute landings with different wind conditions and wave heights the spacecraft could experience when landing in the Pacific Ocean on future missions.

Prior to its arrival at Langley, the heat shield traveled through space and then from the West Coast to the East Coast, making stops at Kennedy Space Center in Florida and Marshall Space Flight Center in Alabama.

Engineers from Marshall, Ames Research Center in Moffett Field, California, and Johnson Space Center in Houston took samples of the heat shield's outer material, known as Avcoat, which burns away when heated and keeps the spacecraft's crew cabin cool and comfortable inside. The samples will be used to examine the char layers and degree of erosion during Orion's first mission.

► [Read the full story](#)

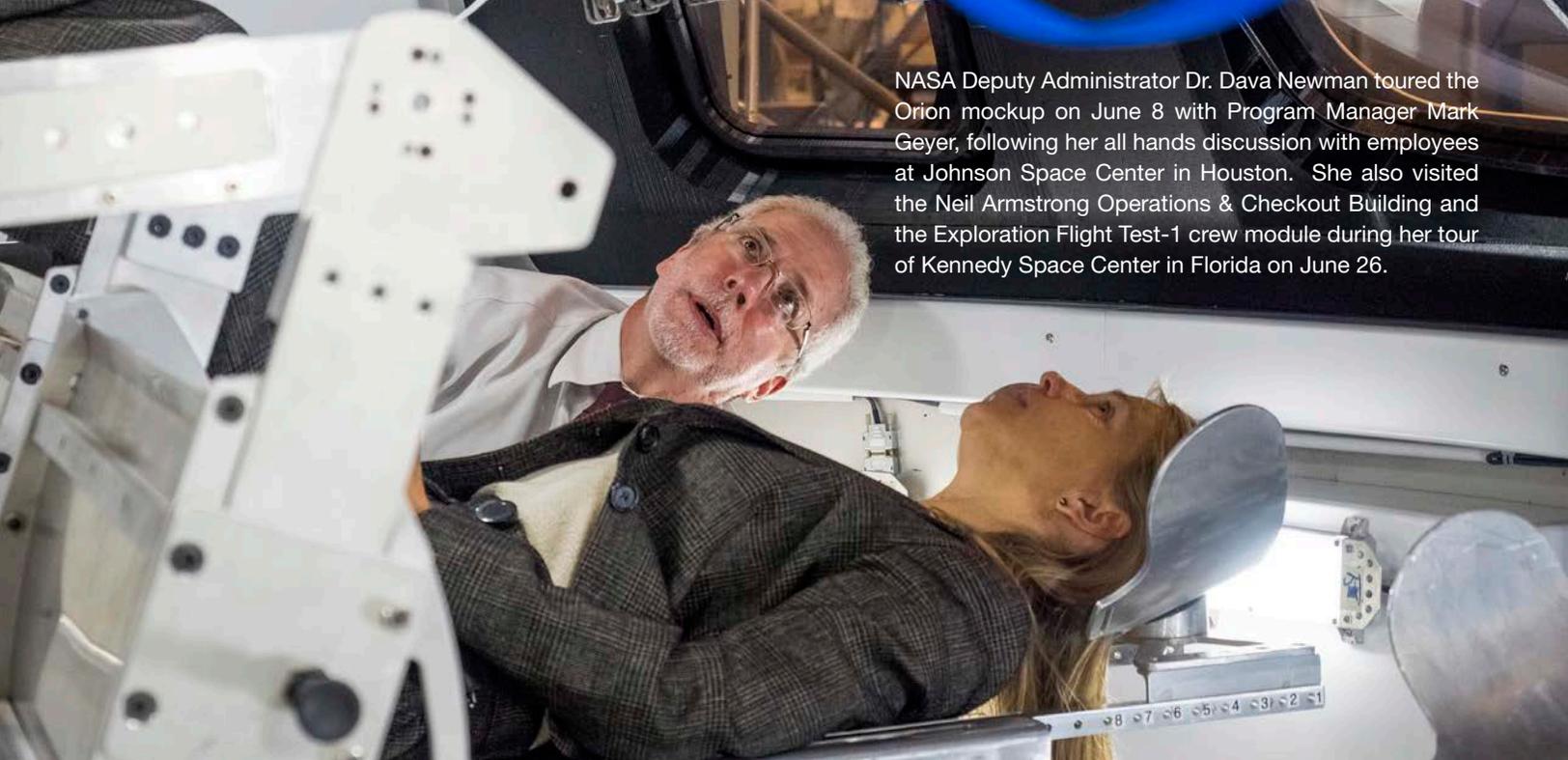
## ORION PROGRAM LEADERSHIP RECEIVE NASA AGENCY HONOR AWARDS

Orion Program managers were honored on June 2 at the 2015 NASA Agency Honor Awards. NASA's Orion Program Manager Mark Geyer and Manager of Production Operations for the Orion Program Scott Wilson were awarded the Distinguished Service Medal and Lockheed Martin's Roger McNamara awarded the Distinguished Public Service Medal. These are NASA's most prestigious honor awards and are presented to a number of carefully selected individuals and groups, both government and non-government, who have distinguished themselves by making outstanding contributions to the Agency's mission.

► [Watch the entire ceremony](#)



Pictured left to right: NASA Administrator Charles Bolden, Manager of Production Operations for the Orion Program Scott Wilson, and NASA Associate Administrator Robert Lightfoot.



NASA Deputy Administrator Dr. Dava Newman toured the Orion mockup on June 8 with Program Manager Mark Geyer, following her all hands discussion with employees at Johnson Space Center in Houston. She also visited the Neil Armstrong Operations & Checkout Building and the Exploration Flight Test-1 crew module during her tour of Kennedy Space Center in Florida on June 26.



## SUPPLIER VISITS CONTINUE FOR EFT-1 POST FLIGHT RECOGNITION

NASA and Lockheed Martin representatives conducted supplier visits and Exploration Flight Test-1 post flight recognition events at Major Tool & Machine in Indianapolis, Indiana (top left) and Ingersoll Machine Tools in Rockford, Illinois (top right), on June 11-12. Major Tool & Machine is building one of three cone panels for Exploration Mission-1 (pathfinder cone lower left) and Ingersoll is machining the aft bulkhead, the bottom section of the pressure vessel (lower right). NASA executives attending

these events included: Tom Whitmeyer, assistant deputy associate administrator for Exploration Systems Development; Karen McNamara, deputy Orion program executive; and Mark Kirasich, Orion deputy program manager.

### ► Local news stories from the visits

[rrstar.com](http://rrstar.com) [WIFR.com](http://WIFR.com)

## ORION BACKSHELL PANEL DISPLAYED AT THE PARIS AIR SHOW



The Orion Exploration Flight Test-1 backshell panel was a featured display item in the Lockheed Martin exhibit at the international Paris Air Show, June 15-21, where Lockheed Martin CEO Marillyn Hewson and NASA Administrator Charles Bolden stopped by to take a look.

## HIGH SCHOOL AEROSPACE SCHOLARS AT SPACE CENTER HOUSTON



NASA Orion engineer Bob Floyd presented an Orion briefing to students during a High School Aerospace Scholars (HAS) session at Space Center Houston on June 16 (top). NASA engineer Nujoud Merancy presented to a different HAS group on June 23 (above).

## THREE THINGS ORION'S FIRST FLIGHT TAUGHT US

*Space News* published an Orion op-ed penned by Lockheed Martin Orion Program Manager Mike Hawes in their June 15 issue. The article highlights Hawes' take on some of the top discoveries of Exploration Flight Test-1.

► [Read the article](#)



# ORION EMPLOYEES RECEIVE SILVER SNOOPY AWARDS

The prestigious Space Flight Awareness Silver Snoopy Award was given to several Orion team members this month at both Michoud Assembly Facility in New Orleans and at Langley Research Center in Hampton, Virginia.

Astronaut Ricky Arnold (photo below) awarded the Silver Snoopy to Todd Surla (left) and Chad Purser (right) at Michoud. At Langley, NASA Langley Director David Bowles, left, and

Astronaut Kevin Ford, right, flank the Silver Snoopy recipients Michael Rodrigues (photo lower left), Richard Boitnott (photo below) and Christopher Kuhl (photo lower right)

The Silver Snoopy awards are chosen and awarded by an astronaut to those candidates who have significantly contributed to the human spaceflight program to ensure safety and mission success.



NASA's Orion Program Manager Mark Geyer was interviewed by Rachel Crane of CNN in front of the Orion mockup at Johnson Space Center on June 23. CNN is working on a multi-part series about space exploration.



Lockheed Martin Vice President and General Manager of Civil Space Wanda Sigur (shown above) presented items flown on Exploration Flight Test-1 to the New Orleans Chamber of Commerce during an event on June 16. Marshall Space Flight Director Patrick Scheuermann was the keynote speaker and NASA Astronaut Ricky Arnold also spoke about the recent test flight.



NASA Orion engineers got chatty about space exploration during the Exploration Systems Development summer webchat series. Lara Kearney conducted a webchat with students at the Girls Start Summer Camp in Austin, Texas, on June 9 and Bob Floyd held a webchat with children at the Frost Museum of Science (shown above) and U.S. Space and Rocket Center in Huntsville, Alabama, on June 11.



NASA's Orion Flight Test Office Manager Don Reed presented an Orion Exploration Flight Test-1 Program Manager's Commendation to Col. Fairhurst, Vice Commander, 45th Space Wing and Lt. Col. McClure, Detachment 3 Commander, 45th Operations Group, 45th Space Wing at Patrick Air Force Base in Florida on June 24. The commendation was given for the U.S. Air Force contributions to the success of Orion's first flight test Dec. 5, 2014. ► [Read the full story](#)



The second place winners of last fall's Orion door decorating contest received a private tour by Orion Deputy Program Manager Mark Kirasich of the Orion mockup in the Space Vehicle Mockup Facility at Johnson Space Center. They also were given a certificate with a patch flown on EFT-1. The winning team, called The Ogives, included Yadira Garcia, April-Lyn McDaniel, Joel Castaneda and Mitchell Barge, all from Ares Technical Services.

## FOLLOW THE PROGRESS OF NASA'S NEW SPACECRAFT FOR HUMAN EXPLORATION:

- NASA's Orion Blog..... [Blogs.NASA.gov/Orion](http://Blogs.NASA.gov/Orion)
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## JULY:

- Single fairing panel separation test in Sunnyvale
- Exploration Flight Test-1 recognition events in Colorado
- Ribbon cutting ceremony at new Integrated Test Lab
- Modal testing of crew module adapter at Plum Brook Station